DOCUMENT RESUME

ED 280 481 IR 051 840

TITLE IFLA General Conference, 1986. Education and Research Division. Section: RT of Editors of Library Journals. Paper.

INSTITUTION International Federation of Library Associations and Institutions, The Hague (Netherlands).

PUB DATE Aug 86

NOTE 8p.; Paper presented at the International Federation of Library Associations (IFLA) General Conference (52nd, Tokyo, Japan, August 24-30, 1986).

PUB TYPE Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS Developed Nations; *Electronic Publishing; Foreign Countries; *Information Technology; International Organizations; Library Associations; Publishing Industry; *Technological Advancement

IDENTIFIERS Japan

ABSTRACT

Presented as part of a roundtable discussion by editors of library journals at the 1986 International Federation of Library Associations (IFLA) conference, "Electronic Publishing," by Hirokazu Iwata of Japan, discusses Dai Nippon Printing's response to new media and electronic publishing. Various aspects of the computerized processing and communication of published material are considered, including the diminishing rate of growth of the publishing industry, the development of the Computerized Typesetting System, and current advances in technology. It is concluded that, as the technology of electronic publishing becomes increasingly sophisticated, it will probably become common practice for data services to convert large quantities of data input into printed material. (KM)

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IFLA

General Conference

Education and Research Division

Section: RT of Editors of Library Journals

Tokyo, Japan
August 1986

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IFLA GENERAL CONFERENCE, TOKYO

Division: Education and Research

Section: RT of Editors of Library Journals

1986

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ELECTRONIC PUBLISHING

by

Hirokazu IWATA, (Tokyo, Japan)

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ELECTRONIC PUBLISHING

Thank you very much, Mr. , for your kind introduction.

Ladies and gentlemen, it is indeed, an honor, to have been asked to speak to you today, on Dai Nippon Printing's response, to new media or electronic publishing. Let me begin by defining the term.

Electronic Publishing, is the processing and communication of published information, by computer.

In Japan, 44,000 books amounting to 500 million copies, and 2200 magazines resulting in 4 billion copies, are published each year. The population of Japan is 120 million people. This means, that 4 books and 33 magazines are read per person in one year.

Total sales in publishing is, ¥1.74 trillion. This comes to ¥14,500 spent per person, a year on books. The educational level in Japan is high. Over 90% have more than a high school level education. The illiterary rate is zero.

With this sort of a society, the growth of the publishing industry in Japan, has been great. Recently, however, this situation has started to show some changes. The first reason for this is the maturity of the publishing market. This is largely related to the amount of space in Japanese homes, and bookstores. To meet the increasingly segmented needs of readers, the number of publications, has grown suddenly. Bookstores can no longer display all of them. In addition, while Japanese housing conditions, are improving, space per person is very limited.

The second reason, is the influence of video equipment. The spread of TVs, has exceeded 100% of the population. We are entering an age of one TV per person. Use of VTRs is still at 40%. For the young generation, that has been surrounded by video, since they were born, the communication of information, through images is natural. Time spent for reading is decreasing.

Busy Japanese people, expect much from new electronic media, that make it possible, to access necessary information, when needed. The first method we can

think of is an on-line database, using the telephone network. Videotex, called CAPTAIN in Japan, uses TVs and telephones, which have spread to 100% of the population. Commercial services began in November, 1984. Everyone predicted, that this medium, would become popular quickly, but after a year and a half, it is making slow progress. There are a number of reasons. The adapter costs ¥100,000 and is expensive. The information is not very good. It can not be denied, however, that the biggest impediment to the popularity of databases is the attitude of the public. They feel that information on TV is free of charge.

There are many databases available for personal computers, but at present, few can be made to pay. The largest expense in making a database, in inputting the data. Considering the character of the Japanese people, it is doubtful, that databases created with large inputting expenses, can be made to pay in the future as well.

We feel, that the only solution to this bottleneck, is to use a computer to convert printed information, for use in electronic media. Inputting expenses can be paid off, when the printed material is published. By computer processing this data to be used again, with electronic media, a large database is possible with a very low cost. With this method, the database business, can show a profit for the first time.

Textual information extracted by Japanese from databases is, of course, in Japanese. As opposed to English, which uses a 26 letter alphabet, Japanese uses several tens of thousands of Chinese characters. Although Japanese word processors, which have Japanese dictionaries stored in their computer have started to become popular, the large majority of writing is still done by hand. The tens of thousands of Japanese printing companies take these handwritten originals, and convert them to type for printing. Most of these printers use typesetting or manual photocomposition.

Large printing companies, including Dai Nippon Printing, have been using

computerized typesetting for over ten years. The CTS (Computerized Typesetting System) has the tens of thousands of Japanese characters, converted into code and input in its computer. After processing, the text is output on printing paper by a computerized typesetter. At first, the CTS was a substitute for typesetting, but as its software increased, the handling of various kinds of information became possible. The CTS is, at present, being used for everything from the processing of dictionaries and rosters to direct marketing made up from different printed material that use such information, and even the maintenance of membership fees. We also developed a Japanese character OCR system that optically reads textual information, in printed material, and converts it to coded information. This has helped streamline the inputting of complicated Japanese.

Since the information stored in the CTS in Japanese has to characters converted into code, and is in the form of digital signals, it can be used for new electronic media that use the same digital signals. The computer language and operating software, for computerized typesetting systems, used in making printed material, and the various on-line database systems, as well as packaged electronic media, floppy disks or CD-ROMs are different. Data accumulated to make up printed material, must then be converted for use in various electronic media. This is the area of research and development, multi-media conversion technology for information, that Dai Nippon Printing is counting on, for its future as a company.

Let me now introduce various technologies, that we have already developed and put on the market. The CD-ROM can store 540 megabytes of digital information and a 12 cm diameter acrylic disc. The volume is equivalent to 540 million English letters, about 300 million characters in Japanese, or about 30 volumes of a 2000 page dictionary. The CD-ROM can be referenced at much greater speed than a dictionary and can be multi-referenced from various angles. Last year, Dai Nippon Printing, converted the Latest Scientific Technological Terminology Dictionary published by Sanshusha, a publisher that exhibits at the IFLA, to the CD-ROM.

The latest scientific terms, can be referenced in three languages, English, German and Japanese. The 3 volumes of data, containing about 30 million letters which comprise this dictionary were written onto the CD-ROM. As the data for these 3 volumes comes to 20 megabytes, it uses only about one-twenty-seventh of the CD-ROM's capacity. If the CD-ROM were used to its full capacity, it could store the data, in about 80 volumes. If new data were to be used, for inputting on a CD-ROM, the time and cost involved would be tremendous. At Dai Nippon Printing, however, data input for making a book is converted, as is by computer for the CD-ROM. With this technology, the cost and time for making a CD-ROM, is reduced to a small fraction.

I will next introduce the creation of videotex information, from printed information. The Japanese Ministry of International Trade and Industry publishes a daily newsletter called "The International Trade and Industry Gazette." This newsletter is printed by Dai Nippon Printing. Dai Nippon Printing converts the data input for printing this newsletter by computer for videotex and the data is broadcast, over the Japanese videotex network, CAPTAIN. The reader can get the same news from the printed material, or on a videotex terminal, but since videotex does not require printing, binding or distribution, the news can be delivered one full day in advance. In addition, even if the newsletters are kept, it would take a long time, to find one specific item. Videotex is computerized so the information, can be easily referenced by item or date.

Third, let me introduce an on-line database created through the conversion of printed material to media. Dai Nippon Printing, has been printing the "Central Medical Magazine", put out by the Central Medical Magazine Publishing Group, for many years. As this magazine, is made with the CTS, an enormous quantity of data has accumulated, in the Dai Nippon Printing CTS host computer. This data has been converted, so that it can be referenced by personal computers. Recently it has come to be offered, by the Maruzen and Kinokuniya networks, as an on-line database service, and as a data service by AMS, a CAPTAIN network.

Finally, I would like to introduce the optical memory card, newly developed

by Dai Nippon Printing. An optical memory portion was added to a plastic card measuring 85 mm wide by 54 mm with a 0.76 mm thickness. The information can be read with a CCD sensor. It has a 2 megabyte memory and can easily store the information in one reference book ~~or book~~. The information recording principle of the optical memory card is that the digitalized information is written onto the card as minute dot information according to a set of predetermined rules to make optically reflective and non-reflective portions. Since we, at Dai Nippon, use a photographic method to make the pattern for the optical recording portion and record everything at once using photoengraving methods used in printing with a master mask containing large quantities of information, mass reproductions are possible.

The reading principle behind the optical memory card is that the differences in the reflections from the optical card recording portion are changed by a sensor into electrical signals, processed and the recorded information data is reproduced.

Equipment manufacturers are making progress in developing optical memory card readers to read the data on our cards. The card should soon spread through society as the leading information communication medium. Costs can be greatly reduced in recording information on this card if new data is not input but various data input and kept for making printed materials are converted by a computer and used.

As has been shown in these four examples, for electronic publishing, the processing and transmission of information by computer, it will probably become common practice to have data services with large quantities of data converted from information input for making printed material.

~~With this I would like to conclude my talk.~~